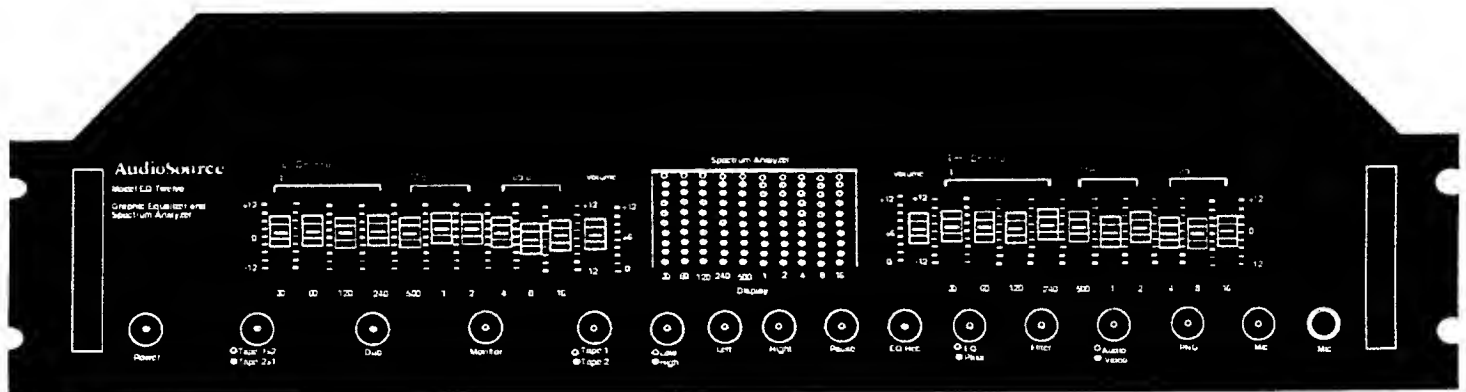


AudioSource EQ TWELVE

Graphic Equalizer/Spectrum Analyzer
with Pink Noise Generator and
Calibrated Microphone



Congratulations on your new purchase, and welcome to the AudioSource family of satisfied customers. We trust that you will continue to enjoy the value and quality of your AudioSource EQ Twelve Graphic Equalizer. In order to make sure that you are experiencing the best performance from your unit, please take a few moments to read this manual before you get started. Also, be sure to retain this manual should you need to refer to it in the future.

<p>WARNING: To reduce the risk of electric shock, do not expose this appliance to rain or moisture.</p>	<div data-bbox="846 102 987 229"></div> <p>The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to persons.</p> <div data-bbox="846 261 987 389"></div> <p>The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.</p>
<div data-bbox="162 234 316 372"></div> <div data-bbox="324 223 665 372"> <p>CAUTION:</p> <p>RISK OF ELECTRICAL SHOCK</p> <p>DO NOT OPEN</p> </div> <div data-bbox="673 234 824 372"></div>	<p>WARNING: TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLETS UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE</p>
<p>CAUTION: To reduce the risk of electric shock, do not remove cover (or back); no user serviceable parts inside. Refer servicing to qualified service personnel.</p>	

Safety Instructions

Read Instructions - All the safety and operating instructions should be read before the appliance is operated.

Retain Instructions - The safety and operating instructions should be adhered to.

Heed Warnings - All warnings on the appliance and in the operating instructions should be adhered to.

Follow Instructions - All operating and use instructions should be followed.

Water and Moisture - The appliance should not be used near water. For example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in situation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

Grounding or Polarization - Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

Power-Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed on or against them, paying particular attention to

cords at plugs, convenience receptacles, and the point where they exit from the appliance.

Cleaning - The appliance should be cleaned only as recommended by the manufacturer.

Power Lines - An outdoor antenna should be located away from power lines.

Non-use Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

Damage Requiring Service - The appliance should be serviced by qualified service personnel when:

- A) The power supply cord or the plug has been damaged; or
- B) Objects have fallen, or liquid has been spilled into the appliance; or
- C) The appliance has been exposed to rain; or
- D) The appliance does not appear to operate normally or exhibits a marked change in performance; or
- E) The appliance has been dropped, or the enclosure damaged.

Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

Product Servicing - In the event your EQ Twelve fails to operate properly, please contact AudioSource directly for further assistance, repair, service, or replacement. Please see back cover for address and telephone number.

A Few Words About Graphic Equalizers

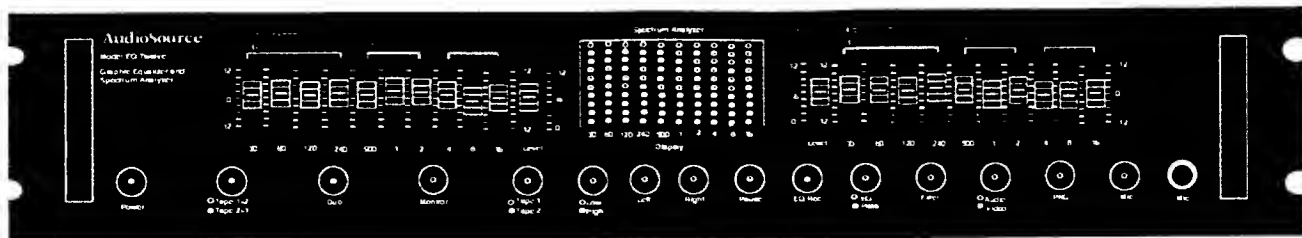
Thank you for choosing this AudioSource EQ Twelve Graphic Equalizer. Used correctly, a Graphic Equalizer is a powerful tool for very detailed control over the sound of your speakers, far more than available from simple tone controls. With the EQ Twelve, you can enhance the sound of older recordings, alter instrumental and vocal balance to suit your own tastes, make "Custom Equalized" recordings, and a multitude of other uses. However, like any tool, excessive or incorrect adjustments can yield very unpleasant results, and can overload your amplifiers and speakers. Improvement of sound quality, particularly in the extreme bass and treble regions, is completely dependent upon the quality of the other equipment you are using in your system. Limited amplifier power and speakers with a limited frequency range are the greatest barriers to achieving accurate, flat response. If you detect any distortion in the bass or treble regions while boosting the EQ Twelve's sliders in these areas, back off immediately, as you are probably overtaxing either your amplifier or your speakers. Please read this manual before use, and follow our suggestions and basic guidelines for the best sound.

Having said that, be assured that "good sound" is a relative thing... We all have different opinions and tastes - The EQ Twelve is designed to allow you to change the sound of your speakers to suit your own musical choices. On the last page of this manual is a chart designed to show you the frequency content and range for a variety of musical instruments. This chart will help you find the proper sliders to adjust to achieve the desired results.

Basic Guidelines

Before adjusting the sliders, it is VERY IMPORTANT to clearly define your objectives. Without this consideration before adjustment takes place, it will be very difficult to attain pleasing results. Carefully listen to your system - ask yourself "What *don't* I like about the sound ?". If the answer is "I want more Bass", you have two ways to accomplish this. Choice #1 - Raise or "Boost" the sliders for the lowest frequencies - on both channels - Left & Right. Choice #2 - lower or "Cut" the sliders on the midrange and higher frequencies. The end result will be the same - You'll have more bass. Conversely, if you'd like to hear more High Frequencies, you have two ways to accomplish this. #1 - "Boost" the sliders for the highest frequencies - on both channels - Left & Right. #2 - "Cut" the sliders of the Midrange and Bass frequencies.

As you can see, there are a variety of ways to accomplish your objectives. Be aware that due to the nature of all equalizer sliders, you will find that movement of any given slider will also have some effect on the setting of the sliders adjacent to either side of it. Experiment - let your ears decide what sounds best, but try to have a clear objective before you begin. One suggestion : avoid the "Boost-Boost Syndrome"... avoid "Boosting" one frequency area too much, by "Cutting" another frequency area. Don't just radically boost everything - it will add noise to the system, and overtax your other components. Subtle, careful equalization will make a huge improvement in the overall sound of your system. Enjoy your EQ Twelve, and if you have any questions, we are here to help. You can call AudioSource at (800) HELP-115.



Using The Controls



Power

Power : Press this button to activate the power on the EQ Twelve. The Red LED will light to show power is "On". Push the button again to turn "Off" the EQ Twelve. The red LED will disappear at this time.



EQ Rec

EQ Rec. : EQ Record. Press this button to make a tape copy with the equalization curve you have just set. This can be useful when making a cassette tape to play in your car. A specially-equalized tape can improve the sound from smaller, less expensive car stereo speakers. With this button in the "Off" position, the cassette tape copy will be recorded without equalization.



Monitor

Monitor: Press this button to "monitor" the Tape Inputs. When the button is in the "Off" position, the "Line In" signal is "monitored".



Tape 1
Tape 2

Tape 1 / Tape 2: This switch selects the Tape deck you wish to monitor - only when the "Monitor" switch has been engaged.



Audio
Video

Audio/Video : This button selects between two input sources. Press the Button "IN" to select an Audio input source, such as a C.D. player. The red LED will light to show this selection. Leave the button "OUT" to select a Video input source, such as a V.C.R., or Lazerdisc player. The red LED will remain unlit to show this selection. Note: the EQ Twelve equalizes the *sound* of these various components. At no time does the EQ Twelve alter the picture, and no "Video-Type" connections are included. These inputs will accept any "Line Level" source, such as a CD player, tape deck, laserdisc, VCR, etc.



EQ
Pass

EQ / Pass : Use this switch to instantly compare the "equalized" and unequalized" sound. Press this button "IN" to bypass the equalization curve. The red LED will light to show this selection. Leave this button in the "OUT" position to equalize your music.



Dub

Dub: Press this button "IN" to activate the "Tape1-2 / Tape 2-1" switch. When this switch is in the "OUT" position, no signal is transferred between tape decks.



Tape 1-2
Tape 2-1

Tape 1-2 or Tape 2-1: Two tape recorders can be used with the EQ Twelve. You can make copies, or "Dub" from one tape recorder to the other. This button allows you to choose which tape machine is the "source" and which is the "destination".



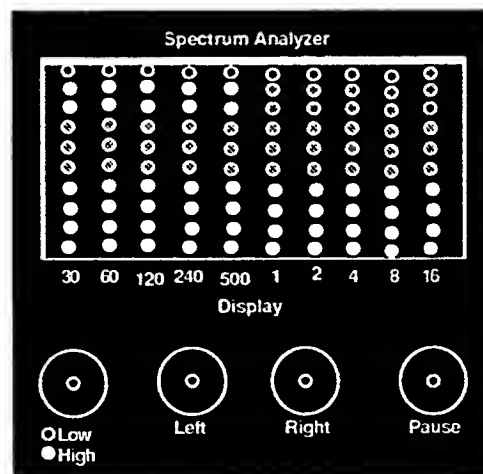
Filter

Filter : The "Subsonic Filter" removes frequencies below 15 Hz. Although these frequencies are below the range of human hearing, your amplifier and speakers will attempt to reproduce them, causing unnecessary burden to these components. You probably won't hear a difference, but we suggest you leave this button pressed "IN".



Using The Controls

EQ Sliders : Each of these sliders will give 12Db. of "Boost" and 12 dB. of "Cut". There are ten sliders per channel - Ten for the Left channel, and Ten for the Right channel. Looking at the front panel, the sliders that control the lowest frequencies are on the left, with the higher frequencies farther right. Usually, identical adjustments should be made for both channels. These sliders are One Octave apart from one another. This corresponds with the entire range of human hearing. The last page of this owner's manual contains a chart, showing which sliders to adjust to affect the sound of various instruments. For instance, the lowest note of a Bass Guitar is at 42 Hz.. By adjusting the sliders at 30 Hz. and 60 Hz., you can raise or lower the volume of the bass guitar, bass drum, and any other musical instruments that occupy this frequency range. In another instance, the sound of the female vocalist occupies a frequency range from roughly 200 Hz. to 1500 Hz.. By adjusting the sliders within this range, you can change the tonal character of the female voice, and any other musical instruments that occupy this frequency range.



Spectrum Analyzer Display: This provides a visual display of the relative signal levels in each of the EQ Sliders. The Spectrum Analyzer display is divided into ten columns of LED's which correspond to the ten EQ Sliders. You can use this display to assist you in setting your equalizer sliders, as well as to obtain information about the frequency content of the music as you play it through the EQ Twelve. In addition to the simple display, the EQ Twelve includes a true Spectrum Analyzer, complete with a built-in Pink Noise Generator and specially calibrated condenser microphone. Detailed instructions for use are on the following pages.

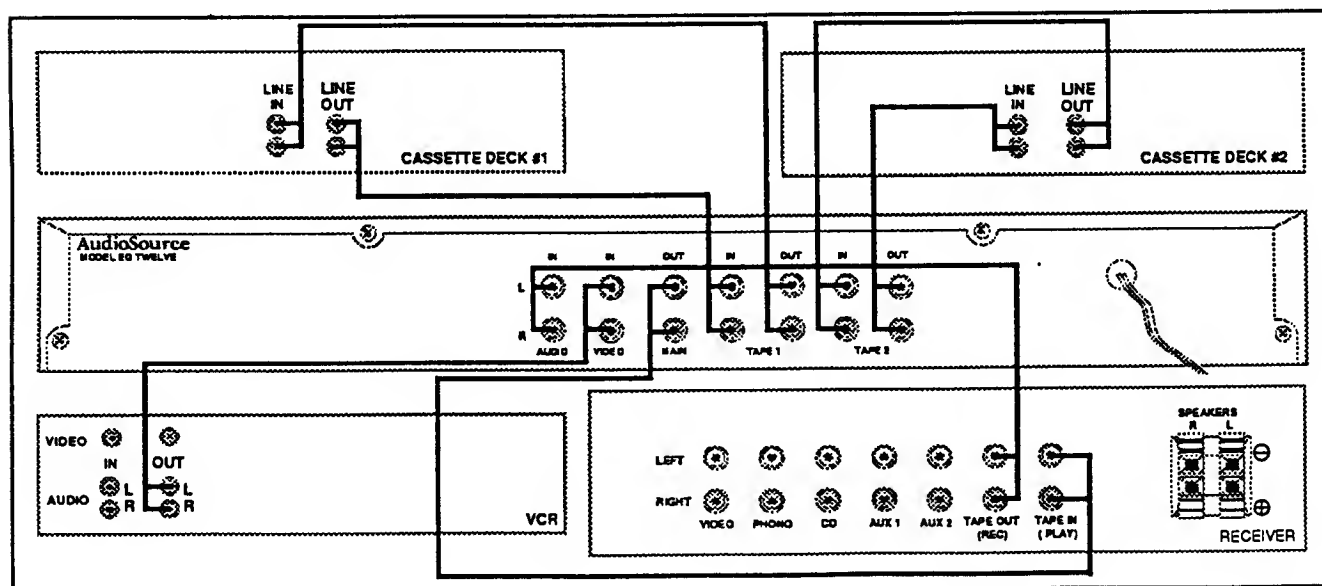


Hooking It All Up

The EQ Twelve should be connected through the "Tape Monitor Loop" of your receiver, integrated amplifier, or preamplifier. Since the EQ Twelve replaces the tape deck, remember to activate the "Tape Monitor" switch on your receiver, integrated amplifier, or preamplifier - as you would when playing your tape deck. Your tape deck can then be plugged into the back of the EQ Twelve.

When making or changing connections, it is always wise to unplug the power cords of your components - or at least make sure the power is "Off", so you won't hear any unexpected "pops" during connection of cables.

1. Connect the **Tape Out** or **Tape Record** jacks (different components use different terminology) on the back of your receiver/integrated amplifier/preamplifier to the **Main Audio In** jacks of the EQ Twelve.
2. Connect the **Main Out** jacks of the EQ Twelve into the **Tape In** or **Tape Monitor** jacks of your receiver/integrated amplifier. this completes the "loop".
3. Always make sure to engage the "Tape Monitor" button on your receiver, no matter which input source you want to listen to. This allows the "Equalized" signal to be heard on any source material.
4. You can connect two tape decks to the EQ Twelve. For Tape 1, connect the **Line In** or **Record** jacks on your tape deck to the **Tape 1 Rec** jacks on the EQ Twelve. Next, connect the **Line Out** or **Monitor** jacks on your tape deck to the **Tape 1 Mon** jacks on the EQ Twelve. For Tape 2, repeat this step using the **Tape 2 Rec** and **Tape 2 Mon** jacks on the EQ Twelve.
5. To listen to your cassette decks, press the **Monitor** button and either the "Tape 1" or "Tape 2" switch on the EQ Twelve.
6. You may use the **Main Video In** jacks on the EQ Twelve to connect any high output source, such as a CD player, tape deck, or the *audio* outputs of a VCR or laserdisc.



Using The Spectrum Analyzer

The Spectrum Analyzer is an incredibly accurate method of determining the frequency output of your speakers. More importantly, it allows you to "flatten" the response of your speakers - very important for professional applications.

Under the Spectrum Analyzer are four buttons that control the "Display". These buttons are described as follows -



○ Low
● High

Low / High : This button is a sensitivity switch for the display. The goal is to see a strong group of LED lights, - so you can easily adjust the sliders. Push this button "IN" for "High Sensitivity" during quieter musical passages. Leave this button "OUT" for "Low Sensitivity" during louder sections. Again, choose whichever setting that shows you a strong group of LED lights.



Left

Left : Press this button to display the frequency content of the Left Channel.



Right

Right : Press this button to display the frequency content of the Right Channel.



Pause

Pause : Press this button to "Pause" the lights on the display. This gives you more time to determine which sliders will need to be adjusted.

The following buttons and features are located on the right side of the front panel. These buttons are to be used during operation of the Spectrum Analyzer. These functions are described as follows.



PNG

PNG : Pink Noise Generator - This button activates the built-in Pink Noise generator. "Pink Noise" sounds like the static between radio stations - in reality, "Pink Noise" is equal amounts of all frequencies, from the lowest to the highest. By playing this "Pink Noise" through your speakers - and using the microphone to analyze the output, you can adjust the equalizer sliders to achieve "flat" response, or at least get a true picture of the response of your speakers.



Mic

Mic : Microphone - This button activates the microphone.



Mic

Mic : Microphone Input Jack - Plug the microphone into this jack. Do not use any other microphone with the EQ Twelve, because another microphone is not accurately calibrated for this specific use, and will give inaccurate readings, and possible damage may result.

Using The Spectrum Analyzer

Below are step by step instructions for using the Spectrum Analyzer. You will be analyzing one speaker at a time. Let's start with the Left speaker...

1. Lower the volume of your receiver or preamp.
2. Plug the microphone into the "Microphone Jack" and turn "ON" the switch on the microphone.
(Make sure to put the batteries into the microphone.)
3. Set the "EQ/Pass" switch to the "OUT" or "EQ" position.
4. Press the "Mic" button on the front panel of the EQ Twelve.
5. Place the microphone in your normal listening position - at "ear level".
6. Press the "Left" button on the front panel of the EQ Twelve.
(Make sure the "Right" button is "OFF")
7. Set the "Level" slider on the LEFT CHANNEL all the way UP.
8. Set the "Level" slider on the RIGHT CHANNEL all the way DOWN.
9. Press the "PNG" button to activate the Pink Noise Generator.
10. Gradually raise the volume of your receiver or preamp - until you hear the "Pink Noise" from your Left speaker, and see a strong visual reading from the display. The column of LED lights on the right side of this display will show the average volume ("AVE") of the left channel. **Raise the volume of your receiver or preamp until this "AVE" column of LED lights is lit only to the first yellow light. (See display drawing for this.)** This is the proper volume at which to make your adjustments. **Leave the volume at this position.** At this point, you are seeing the frequency output from your left speaker. Each column of LED lights corresponds with an "EQ Slider" on the equalizer. Notice that some columns of LED lights are higher than other columns of LED lights. **Adjust each "EQ Slider" so that all columns of LED lights are lit only to the first yellow light.**

Your left speaker is now reproducing "Flat Response".

Now, let's analyze the "Right" speaker...

Repeat Steps 1,2,3,& 4.

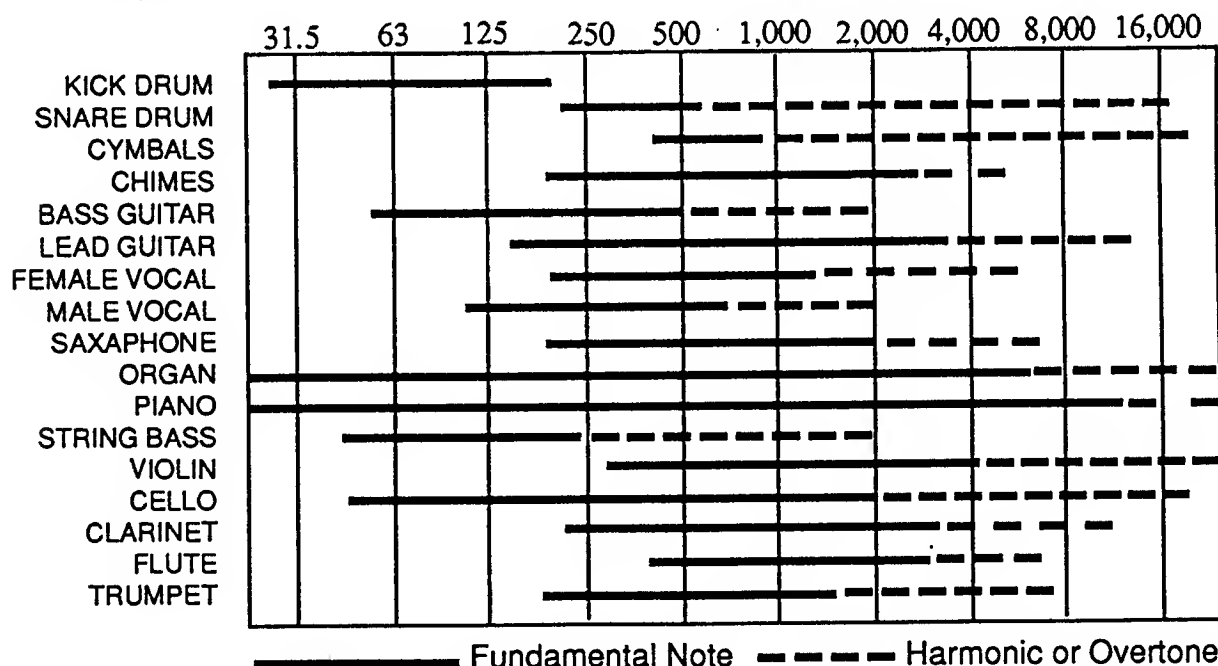
5. Leave the microphone at the same position.
6. Press the "Right" button on the front panel of the EQ Twelve.
(Make sure the "Left" button is "OFF")
7. Set the "Level" slider on the RIGHT CHANNEL all the way UP.
8. Set the "Level" slider on the LEFT CHANNEL all the way DOWN.
9. Press the "PNG" button to activate the Pink Noise Generator.
10. Repeat Step # 10 - **Leave the volume of your receiver or preamp where it is. This ensures accurate settings for both channels.** You should be hearing "Pink Noise" from the Right speaker. After adjusting the proper sliders, your right speaker is now reproducing "Flat Response".

Please use this equalization setting as a reference point only. You may feel that this particular setting, even though the response is flat, is not the sound you would like to hear....Use your own judgement and equalize to your own musical tastes. Bear in mind the guidelines and suggestions offered elsewhere in this manual for the best results.

EQ Twelve Specifications

Frequency Response	5 Hz -100kHz + or - 1 dB
Harmonic Distortion	0.015% of nominal output
Signal to Noise Ratio	- 98 dB
Input Impedance	100 k Ohms
Output Impedance	600 Ohms
Load Impedance	10 k Ohms or more
Inputs	Audio, Video, Tape 1, Tape 2
Outputs	Main , Tape 1, Tape 2
Control Center Points	30 Hz, 60 Hz, 120 Hz, 240 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, 16 kHz
Control Range	+ or - 12 dB
Dimensions	19" (W) x 4 3/8" (H) x 10 1/4" (D)
Weight (without packaging)	9 3/4 lbs.
Power Consumption	9 Watts

The chart below will help you identify which sliders on the GRAPHIC EQUALIZER Section will most affect the sound and balance of particular instruments by illustrating where they lie in the overall sonic spectrum



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